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10/617,148	07/10/2003	Bruce Gregory Warren	491442011620	1394

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EXAMINER	
MEW, KEVIN D	

ART UNIT	PAPER NUMBER
2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/617,148	WARREN ET AL.	
	Examiner	Art Unit	
	Kevin Mew	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 April 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Final Action

Response to Amendment

1. Applicant's Remarks/Arguments filed on 4/30/2007 regarding claims 1, 3-7 have been considered. Claims 1, 3-7 are currently pending and claim 2 has been cancelled by applicant.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 3-4, 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art, Berman (USP 6,118,776) in view of the admitted prior art, Black et al. (USP 6,614,796).

Regarding claim 1, Berman discloses a Fibre Channel Arbitrated Loop interconnect system (**Fiber Channel Fabric**, Fig. 14) comprising:

a first port (**port control module PCM 451**, col. 11, lines 30-58, col. 14, lines 4-14 and element 451, Fig. 14) in a plurality of ports (**a plurality of ports 451, 455, 474, 475**, Fig. 14),

a second port (**brouter module or another PCM module**, col. 11, lines 30-58 and element 455, Fig. 14) in the plurality of ports (**the plurality of ports 451, 455, 474, 475**, Fig. 14),

said first and second ports including port logic to monitor Open (OPN) arbitrated loop primitives (**port control modules PCM include port logic to monitor arbitrated loop**

primitives, col. 20, lines, 27-59), and adapted to connect to devices supporting a Fibre Channel Arbitrated Loop protocol (**ports supporting FC-2 protocol**, col. 11, lines 1-5),

a crossbar switch coupled to the plurality of ports (**NxN matrix switch core fabric coupled to the plurality of ports 451, 455, 474, 475**, col. 13, lines 63-65 and element 453, Fig. 14),

a route determination apparatus (**a router**, element 452, Fig. 14) including a routing table (**router includes an address match table**, col. 13, lines 26-50 and element 531, Fig. 16) comprised of Arbitrated Loop Physical Addresses (ALPAs) (**address match table comprises 24-bit addresses**, col. 13, lines 26-50), the route determination apparatus separate from the plurality of ports (**the plurality of ports 451, 455, 474, 475**, Fig. 14) and directly coupled to each of the plurality of ports (**the router is directly coupled to each port**, Fig. 14) and the crossbar switch (**the router is separate from the port controls 451 and 474**, Fig. 14) through signaling paths (**via signaling paths 459, 460, 461, 462**, col. 14, lines 4-14 and Fig. 14), the route determination apparatus for programming the crossbar switch (**router programs the switch core to connect routes**, col. 12, lines 13-26) to establish direct paths between the first and second ports in the crossbar switch, the direct paths excluding all other ports (**NxN matrix switch core fabric creates direct path from PCM module 451 to Brouter module 455**, col. 11, lines 30-58).

wherein the crossbar switch creates the direct paths between the first and second ports (**NxN matrix switch core fabric creates direct path from PCM module 451 to Brouter module 455 or another PCM module**, col. 11, lines 30-58).

wherein priority for each port is independent of the ALPAs (**the port with the highest priority will be used which is independent of the addresses**, col. 13, lines 18-25).

Berman does not explicitly show the direct paths between the ports are created based on the OPN arbitrated loop primitives.

However, Black discloses a FCAL switching system and method in which the destination address of FCAL OPN primitives are used to establish a direct connection between a source port of a source node and a remote port of a destination node (col. 5, lines 42-47, 66-67, col. 6, lines 1-10).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the fiber channel arbitration method and apparatus of Berman with the teaching of Black in creating a direct path connection between two ports based on the OPN primitives such that FC-AL system and method Berman will create the direct paths between the ports based on the OPN arbitrated loop primitives.

The motivation to do so is to use OPN primitives, instead of the frame of data to find the destination node, to deduce the location of destination node and cut out all subloops and nodes thereon that are not necessary for communication between the source and destination nodes thereby decreasing unnecessary delay in completing each loop tenancy and increasing bandwidth.

Regarding claim 3, Berman discloses a system for interconnecting Fibre Channel Arbitrated Loop devices (**a fiber channel private loop device interconnect system**, col. 5, lines 22-29) comprising:

a first Arbitrated Loop containing one or more Fibre Channel arbitrated loop devices (**a first arbitrated loop containing one or more private loop devices**, col. 3, lines 3-13),

a second Arbitrated Loop device (**a second arbitrated loop containing one or more private loop devices**, col. 3, lines 3-22),

a Fibre Channel Arbitrated Loop interconnect system (**a fiber channel private loop device interconnect system**, col. 3, lines 3-22), the interconnect system including:

a first port (**port 451**, Fig. 14) in a plurality of ports (**a plurality of ports 451, 455, 474, 475**, Fig. 14), the first port containing port logic coupled to the first Arbitrated Loop (**port control module PCM 451 contains port logic**, col. 11, lines 30-58, col. 14, lines 4-14 and element 451, Fig. 14),

a second port (**port 455**, Fig. 14) in the plurality of ports (**a plurality of ports 451, 455, 474, 475**, Fig. 14), the second port containing port logic coupled to the second Arbitrated Loop (**brouter module or another PCM module contains port logic**, col. 11, lines 30-58 and element 455, Fig. 14),

the first and second ports adapted to connect to devices supporting a Fibre Channel Arbitrated Loop protocol (**ports supporting FC-2 protocol**, col. 11, lines 1-5);

route determination apparatus (**a router**, element 452, Fig. 14) separate from the plurality of ports (**the router is separate from the port controls plurality of ports 451, 455, 474, 475**, Fig. 14) and directly coupled to each of the plurality of ports (**the router is directly coupled to each of the ports**, Fig. 14) through separate signaling paths for selecting a direct route between the first and second ports (**via separate signaling paths 459, 460, 461, 462**, col. 14, lines 4-14 and Fig. 14), the direct route excluding all other ports (**the path between a PCM module and**

brouter module or another PCM module is excluding other ports, Fig. 14), and including a routing table (**router includes an address match table**, col. 13, lines 26-50 and element 531, Fig. 16) comprised of Arbitrated Loop Physical Addresses (ALPAs) and their associated ports (**address match table comprises 24-bit addresses**, col. 13, lines 26-50)

a crossbar switch directly coupled to the first and second ports and to the route determination apparatus (**NxN matrix switch core directly coupled to port control modules and brouter module**, col. 13, lines 63-65 and element 453, Fig. 14) through separate signaling paths (**via separate signaling paths 476, 457, 458**, Fig. 14) for switching frames between ports under control of the route determination apparatus (**the router is to connect the frame route between the ports**, col. 12, lines 13-26),

wherein Fibre Channel frames are transferred between a device on the first Arbitrated Loop and a device on the second Arbitrated Loop (**Fiber Channel frames are routed between device on the fiber channel arbitrated loops**, col. 3, lines 3-22), and

wherein priority for each port is independent of the ALPAs (**the port with the highest priority will be used which is independent of the addresses**, col. 13, lines 18-25).

Berman does not explicitly show selecting the direct path between the first and second ports based on received Fibre Channel Arbitrated Loop primitives from the ports.

However, Black discloses a FCAL switching system and method in which the destination address of FCAL OPN primitives are used to establish a direct connection between a source port of a source node and a remote port of a destination node (col. 5, lines 42-47, 66-67, col. 6, lines 1-10).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the fiber channel arbitration method and apparatus of Berman with the teaching of Black in creating a direct path connection between two ports based on the OPN primitives such that FC-AL system and method Berman will create the direct paths between the ports based on the OPN arbitrated loop primitives.

The motivation to do so is to use OPN primitives, instead of the frame of data to find the destination node, to deduce the location of destination node and cut out all subloops and nodes thereon that are not necessary for communication between the source and destination nodes thereby decreasing unnecessary delay in completing each loop tenancy and increasing bandwidth.

Regarding claim 4, Berman also discloses the interconnect system of claim 3 wherein the Arbitrated Loop primitives that cause the crossbar switch to create paths between ports includes one or more of the following: Arbitrate (ARB), Open (OPN) and Close CLS (**OPN primitives includes one of ARBs, OPNs, and Closes**, col. 20, lines 41-46).

Regarding claim 6, Berman discloses the interconnect system of claim 3 wherein the first Arbitrated Loop device is on the first port (**loop device connected to fiber media is on port control module 451**, Fig. 14).

Regarding claim 7, Berman discloses the interconnect system of claim 3 wherein the second Arbitrated Loop device is on the second port (**loop device connected to bridged network is on brouter module 455**, Fig. 14)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Berman in view of Black, and in further view of Coffey (US Publication 2002/0044561).

Regarding claim 5, Berman and Black disclose all the aspects of the claimed invention set forth in the rejection of claim 3 above, except fail to explicitly show the interconnect system of claim 3 including a R_RDY counter to count R_RDY'S sent by the originating Fibre Channel Arbitrated Loop device before the OPN response is received by the originating Fibre Channel Arbitrated Loop Device.

However, Coffey discloses a R_RDY primitive indicates that an interface buffer is available for receiving frames continuously until something causes the current state to change (see paragraph 0055, lines 15-20). Coffery further discloses is the OPN primitive is used for opening the connection between the transmitter port and the receiver port (see entire paragraph 0068). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the fiber channel arbitration method and apparatus of Berman

and Black with the teaching of Coffey in using the R_RDY primitive such that the value of the R_RDY primitive will be used in the event that the receiver is ready to receive data frames before the originator will receive any opening connection response from the receiver. The motivation to do so is to avoid consuming resources to open connection between two ports unnecessary when the receiver is not yet ready to receive further data frames from the originator.

Response to Arguments

4. Applicant's arguments filed on 4/30/2007 have been fully considered but they are not persuasive.

In response to applicant's argument on page 2, first paragraph of the Remarks that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "primitive switch", "routing based on primitives") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). It is recognized by the examiner that only the features of "the crossbar switch creates the direct paths between the first and second ports based on the OPN arbitrated loop primitives" are recited in claim 1, neither "primitive switch" nor "routing based on primitives" is mentioned in the claim.

In response to applicant's argument on page 3, third paragraph, and page 4, paragraphs 1-3 of the Remarks that the Berman and Black references are fundamentally different and thus it is not obvious to combine the Berman reference with the Black reference, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure

of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). Moreover, it is well known in the art of FCAL that an OPN primitive comprises a destination address and/or ID port, which is taught in the Black reference (col. 8, lines 41-67). Since Berman also discloses a FCAL switch comprising a port that implements OPN primitives as well as recognizing the destination identifier D_ID (col. 11, lines 10-16, col. 20, lines 27-59), the Berman reference thus suggests monitoring the OPN primitives and is fundamentally compatible with the Black reference.

In response to applicant's argument on page 4, last paragraph of the Remarks that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In light of the foregoing reasons, claims 1, 3-4, 6-7 stand rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art, Berman (USP 6,118,776) in view of the admitted prior art, Black et al. (USP 6,614,796), and claim 5 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Berman in view of Black, and in further view of Coffey (US Publication 2002/0044561).

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 571-272-3141. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin Mew KM
Work Group 2616

CHI PHAM
SUPERVISORY PATENT EXAMINER
7/20/07